

# **130.0 TO 134-130.5 NR Mandatory Lighting Controls and Building Power**

## **SUBCHAPTER 4**

### **NONRESIDENTIAL, HIGH-RISE RESIDENTIAL, AND HOTEL/MOTEL OCCUPANCIES—MANDATORY REQUIREMENTS FOR LIGHTING SYSTEMS AND EQUIPMENT, AND ELECTRICAL POWER DISTRIBUTION SYSTEMS**

#### **SECTION 130.0 – LIGHTING CONTROLS AND EQUIPMENT—GENERAL**

- (a) Except as provided in Subsections (b) ~~and (e)~~, the design and installation of all lighting systems and equipment in nonresidential, high-rise residential, hotel/motel buildings, and outdoor lighting subject to Title 24, Part 6, shall comply with the applicable provisions of Sections ~~131-130.0~~ through ~~139-130.5~~. ~~All lighting controls and equipment shall be installed in accordance with the manufacturer's instructions.~~
- (b) Function areas where compliance with the residential lighting Standards are required.** The design and installation of all lighting systems in the following function areas shall comply with the applicable provisions of Section 150.0(k).
- ~~(1.b)~~ Indoor Lighting in High-rise Residential Dwelling Units and Hotel/Motel Guest Rooms. The design and installation of all lighting systems, lighting controls and equipment in ~~h~~High-rise residential dwelling units
2. and in hHotel/ and motel guest rooms shall comply with the applicable provisions of Section 150(k).
- ~~(3.e)~~ Outdoor Lighting for High-rise Residential Dwelling Units and Hotel/Motel Guest Rooms. Outdoor lighting that is ~~permanently~~ attached to ~~the a high-rise residential or hotel/motel~~ building, and is separately controlled from the inside of a ~~high-rise residential~~ dwelling unit or guest room ~~shall comply with Section 150(k)13.~~
4. Fire station dwelling accommodations.
- ~~(d)~~ **Luminaire classification and power.** Luminaires shall be classified and wattage shall be determined as follows, or by a method approved by the Executive Director:
1. The wattage of luminaires with line voltage lamp holders, ~~other than GU 24 as determined according to Section 130(e)~~, and not containing permanently installed ballasts or transformers shall be determined as follows:
- A. For other than recessed luminaires, Wattage shall be determined as follows:
- i. The maximum relamping rated wattage of the luminaire, as listed on a permanent, pre-printed, factory-installed label, as specified by UL 1598, and
- ii. -
- B. For** recessed luminaires with medium screw base sockets, wattage shall not be less than 50 watts per socket, the larger of the maximum relamping rated wattage of the luminaire, as listed on a permanent, pre-printed, factory-installed label, as specified by UL 1598, or the following:
- i. 50 watts per socket for luminaires with housings or trims with an aperture diameter less than 5 inches regardless of mounting height; or
- ii. 50 watts per socket for luminaires with housings or trims with an aperture diameter of greater than or equal to 5 inches and a mounting height of 11 feet or less; or

- iii. ~~60 watts per socket for luminaires with housings or trims with an aperture diameter of greater than or equal to 5 inches and a mounting height of greater than 11 feet but less than 15 feet; or~~
- iv. ~~75 watts per socket for luminaires with housings or trims with an aperture diameter of greater than or equal to 5 inches and a mounting height of 15 feet or more.~~

- C. ~~For~~ I luminaires and luminaire housings designed to accommodate a variety of trims or modular components that allow the conversion between ~~screw-based and pin-based sockets incandescent and any other lighting technology~~ without changing the luminaire housing or wiring, ~~the highest wattage designated by the correlated marking on a permanent, pre-printed, factory-installed label on the luminaire housing shall be used shall be classified as incandescent.~~
- D. Screw-based adaptors shall not be used to convert an incandescent luminaire to any type of non-incandescent technology. Screw-based adaptors, including screw-base adaptors classified as permanent by the manufacturer, shall not be recognized for compliance with Title 24, Part 6.
- E. Luminaires and luminaire housings manufactured with incandescent screw base sockets shall be classified only as incandescent. Field modifications, including hard wiring of an LED module, shall not be recognized as converting an incandescent luminaire or luminaire housing to a non-incandescent technology.
- ~~DE.~~ For luminaires with line voltage lamp holders, the factory-installed wattage label shall not consist of peel-off or peel-down layers or other methods which that allow the rated wattage to be changed after the luminaire has been shipped from the manufacturer.

2. ~~The wattage of~~ I luminaires with permanently installed or remotely installed ballasts shall be determined as follows:

- A. Wattage shall be the operating input wattage of the rated lamp/ballast combination published in ballast manufacturer's catalogs based on independent testing lab reports as specified by UL 1598.
- B. The wattage of a compact fluorescent or high intensity discharge luminaire that can accommodate a range of wattages without changing the luminaire housing, ballast, or wiring shall be the larger of:
- i. The wattage of the lamp/ballast combination determined in accordance with Section 130.0(c)2A when using the wattage of the initially installed lamp/ballast combination, or
  - ii. ~~¶~~ The average wattage of all of the lamp/ballast combinations for which the luminaire is rated.
- C. Replacement of lamps in a luminaire manufactured or rated for use with linear fluorescent lamps, with linear lamps of a different technology such as linear LED lamps, shall not be recognized as converting the fluorescent luminaire to a different technology for compliance with Title 24, Part 6.

3. ~~The wattage of~~ I line-voltage lighting track and plug-in busway which allows the addition or relocation of luminaires without altering the wiring of the system shall be determined by one of the following methods:

- A. The wattage of line voltage busway and track rated for more than 20 amperes shall be the total volt-ampere rating of the branch circuit feeding the busway and track.
- B. The wattage of line voltage busway and track rated for 20 amperes or less shall be determined by one of the following methods:
- i. ~~\_\_\_\_\_~~ The volt-ampere rating of the branch circuit feeding the track or busway; or
  - ii. ~~\_\_\_\_\_~~ The higher of the rated wattage of all of the luminaires included in the system, where wattage is determined according to Section 130.0(~~dc~~)1, 2, 4, 5, or 6 as applicable, or 45 watts per linear foot; or
  - iii. ~~\_\_\_\_\_~~ When using an line-voltage track lighting integral current limiter, the higher of the volt-ampere rating of an integral current limiter controlling the track or busway, or 12.5 watts per linear foot of track or busway, provided that the integral current limiter complies with Section 119(I). An Integral current limiter not certified to the Energy Commission according to Section 110.9, or not Acceptance tested in accordance with Section 130.4, shall not use subsection B(iii) to determine luminaire power; or
  - iv. ~~\_\_\_\_\_~~ When using a dedicated track lighting supplementary overcurrent protection panel, the sum of the ampere (A) rating of all of the overcurrent protection devices times the branch circuit voltages.

Track lighting supplementary overcurrent protection panels not meeting the applicable requirements in Section 110.9, or not Acceptance tested in accordance with Section 130.4, shall not use subsection B(iv) to determine luminaire power. The panel shall meet all of the following requirements:

- a. ~~Be listed as defined in Section 101; and~~
  - b. ~~Be used only with line voltage track lighting; and~~
  - c. ~~Be permanently installed in an electrical equipment room, or permanently installed adjacent to the lighting panel board providing supplementary overcurrent protection for the track lighting circuits served by the supplementary over current protection panel; and~~
  - d. ~~Be prominently labeled "NOTICE: This Panel for Track Lighting Energy Code Compliance Only. The overcurrent protection devices in this panel shall only be replaced with the same or lower amperage. No other overcurrent protective device shall be added to this panel. Adding to, or replacement of existing overcurrent protective device(s) with higher continuous ampere rating, will void the panel listing and require re-submittal and re-certification of California Title 24, Part 6 compliance documentation."~~
4. ~~The wattage of~~ IL luminaires or lighting systems with permanently installed or remotely installed transformers shall be determined as follows:
- A. ~~For low-voltage luminaires that are not track lighting, and other low voltage luminaires that do not allow the addition of lamps, lamp holders, or luminaires without rewiring, shall be;~~ the rated wattage of the lamp/transformer combination, listed on a permanent, pre-printed, factory-installed label, as specified by UL 2108,; and
  - B. ~~For low-voltage lighting systems, including low voltage tracks lighting, and other low-voltage lighting systems which allow the addition of lamps, lamp holders, or luminaires without rewiring, shall be the maximum rated input wattage of the transformer, listed on a permanent, pre-printed, factory-installed label, or maximum rated wattage published in transformer manufacturer's catalogs, as specified by UL 2108,~~
  - ~~BC.~~ For luminaires or and lighting systems with transformers the maximum rated transformer wattage greater than 53 watts, the factory-installed wattage label shall not consist of peel-off or peel-down layers or other methods which allow the rated wattage to be changed after the luminaire or lighting system has been shipped from the manufacturer.
5. ~~The wattage of~~ IL light emitting diode (LED) Luminaires, ~~and or~~ LED Light Engine ~~with Integral Heat Sink~~ shall be ~~determined as follows:~~
- A. ~~Wattage shall be~~ the maximum rated input wattage of the system when tested in accordance with IES LM-79-08Reference Joint Appendix JA8.
  - B. The maximum rated input wattage shall be listed on a permanent, pre-printed, factory-installed label as specified by UL.
  - C. An LED lamp, integrated or non-integrated type in accordance with the definition in ANSI/IES RP-16-2010, shall not be classified as a LED lighting system for compliance with Title 24, Part 6. LED modules having screw-bases including screw based pig-tails, screw-based sockets, or screw-based adaptors shall not be recognized as a LED lighting system for compliance with Title 24, Part 6.
  - D. Luminaires and luminaire housings equipped with screw-base sockets shall not be classified as a LED lighting system for compliance with Title 24, Part 6.
  - E. Luminaires manufactured or rated for use with low-voltage incandescent lamps, into which have been installed LED modules or LED lamps, shall not be recognized as a LED lighting system for compliance with Title 24, Part 6.
6. The wattage of all other miscellaneous lighting equipment shall be the maximum rated wattage of the lighting equipment, or operating input wattage of the system, listed on a permanent, pre-printed, factory-installed label, or published in manufacturer's catalogs, based on independent testing lab reports as specified by UL 1574 or UL 1598. Lighting technologies listed in subsections 1 through 5 shall not use subsection 6 to determine luminaire classification or power.

~~(e) GU 24 Lamps, Luminaires, and Adaptors.—GU 24 lamps, luminaires, and adaptors installed in California shall meet the following requirements:~~

~~1.—Lamps with GU 24 bases shall have a minimum efficacy no lower than specified in Table 150-C.~~

~~2.—The wattage of luminaires with GU 24 lamp holders shall be the operating input wattage as listed on a permanent, pre-printed, factory-installed label on the luminaire housing, as specified by UL. Luminaires with GU 24 lampholders shall not be rated for any lamp or lighting system that has an efficacy lower than specified in Table 150-C3.  
—Luminaires with GU 24 lampholders shall not have modular components allowing conversion to any lamp or lighting system that has an efficacy lower than specified in Table 150-C.~~

~~4.—There shall be no adaptors that convert a GU 24 socket or GU 24 lamp holder to any other line voltage socket or lamp holder, or to any lighting system that has an efficacy lower than specified in Table 150-C.~~

(d) **Lighting Controls.** All lighting controls and equipment shall comply with the applicable requirements in Section 110.9, and shall be installed in accordance with the manufacturer's instructions.

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## SECTION 130.1 – INDOOR LIGHTING CONTROLS THAT SHALL BE INSTALLED

### (a) Area Controls.

1. ~~Each area enclosed by ceiling-height partitions. All luminaires shall be functionally controlled with have one or more independent manually switched on-ON and off-OFF lighting control devices switching controls for all or control devices. Each area enclosed by ceiling-height partitions shall be independently controlled.~~

**EXCEPTION to Section 130.1(a)1:** Up to 0.2 watts per square foot of lighting in any area within a building may be continuously illuminated during occupied times to allow for emergency egress, if:

A. The area is designated an emergency egress area on the plans and specifications submitted to the enforcement agency under Section 10-103(a)2 of Title 24, Part 1; and

B. The egress lighting is not controlled by switches accessible to unauthorized personnel.

2. ~~This~~These lighting control switching or control devices shall be: shall meet the following requirements:

A. Shall be readily accessible; and

B. Shall be operated with a manual switch that is located so that a person using the device can see the lights or area in the same room or area with the lighting that is controlled by that switch device.

C. , or so that the area being lit is annunciated; and

May be a dimmer switch that allows manual ON and OFF functionality. ~~C. Manually operated, or automatically controlled by an occupant sensor that meets the applicable requirements of Section 119.~~

**EXCEPTION to Section 130.1(a)2:** In malls, auditoriums, retail and wholesale sales floors, industrial facilities, convention centers, and arenas, the lighting control device shall be located so that a person using the device can see the lights or area controlled by that lighting control, or so that the area being lit is annunciated.

23. **Other Lighting Controls.** Other lighting control devices may be installed in conjunction with addition to the manual switching lighting control or control device provided that they do not override the functionality of they:

A. Permit the switching or control device to manually turn the lights ON and off OFF in Section 130.1(a)1, 2, or 4 each area enclosed by ceiling-height partitions; and

~~B. Reset the mode of any automatic system to normal operation without further action.~~

**EXCEPTION 1 to Section 131(a):** Up to 0.3 watts per square foot of lighting in any area within a building that must may be continuously illuminated for reasons of building security, if:

A. The area is designated a security or emergency egress area on the plans and specifications submitted to the enforcement agency under Section 10-103(a)2 of Title 24, Part 1; and

B. The security or egress lighting is controlled by switches accessible only to unauthorized personnel.

**EXCEPTION 2 to Section 131(a):** Public areas with switches that is accessible only to authorized personnel.

4. **Separately Controlled Lighting Systems.** In addition to the requirements in Section 130.1(a)1, 2, and 3:

A. General lighting shall be separately controlled from all other lighting systems in an area.

B. Floor and wall display, window display, case display, ornamental, and special effects lighting shall each be separately controlled on circuits that are 20 amps or less.

C. When track lighting is used, general, display, ornamental, and special effects lighting shall each be separately controlled.

(b) **Multi-Level Lighting Controls.** The general lighting of any enclosed ~~space area~~ 100 square feet or larger, and ~~has a~~ connected lighting load that exceeds ~~0.8-0.5~~ watts per square foot shall meet the following requirements:

1. Lighting shall have the required number of control steps, ~~shall have multi-level lighting and meet the uniformity requirements in accordance with Table 130.1-A; and~~
2. Lighting shall be controlled by manual controls in accordance with Section 130.1(a) that are capable of controlling lighting through all of the required control steps in accordance with Table 130.1-A; and
3. Multi-level lighting controls shall not override the functionality of other lighting controls installed for compliance with Sections 130.1(a), and (c through f); and
4. Each luminaire shall be controlled by at least one of the following methods:
  - A. Manual dimming meeting the applicable requirements of Section 130.1(a)
  - B. Lumen maintenance as defined in Section 100.1
  - C. Tuning as defined in Section 100.1
  - D. Automatic daylighting controls in accordance with Section 130.1(d)
  - E. Demand responsive lighting controls in accordance with Section 130.1(f)

~~controls. Multi-level controls shall have at least one control step that is between 30 percent and 70 percent of design lighting power and allow the power of all lights to be manually turned off. A reasonably uniform level of illuminance shall be achieved by any of the following:~~

- ~~1. Continuous or stepped dimming of all lamps or luminaires; or~~
- ~~2. Switching alternate lamps in luminaires, alternate luminaires, and alternate rows of luminaires. \_\_\_\_\_~~

**~~EXCEPTIONS to Section 131(b):~~**

**~~1. Lights in corridors.~~**

**~~EXCEPTION 1 to Section 130.1(b):~~** Classrooms with a connected general lighting load of 0.7 watts per square feet and less shall have at least one step between 30-70 percent of full rated power.

**~~EXCEPTION 2 to Section 130.1(b):~~** An ~~space area~~ enclosed by ceiling height partitions that has only one luminaire with no more than two lamps

**~~(c) Daylight Areas.~~**

~~1. Daylight areas shall be defined as follows:~~

- ~~A. **DAYLIGHT AREA** the total daylight area shall not double count overlapping areas with any primary sidelit daylight area, secondary sidelit daylight area, or skylit daylight area.~~
- ~~B. **DAYLIGHT AREA, PRIMARY SIDELIT** is the combined primary sidelit area without double counting overlapping areas. The floor area for each primary sidelit area is directly adjacent to vertical glazing below the ceiling with an area equal to the product of the sidelit width and the primary sidelit depth.~~

~~The primary sidelit width is the width of the window plus, on each side, the smallest of:~~

- ~~i. 2 feet; or~~
- ~~ii. The distance to any 5 feet or higher permanent vertical obstruction.~~

~~The primary sidelit depth is the horizontal distance perpendicular to the glazing which is the smaller of:~~

- ~~i. One window head height; or~~
- ~~ii. The distance to any 5 feet or higher permanent vertical obstruction.~~

~~C. **DAYLIGHT AREA, SECONDARY SIDELIT** is the combined secondary sidelit area without double counting overlapping areas. The floor area for each secondary sidelit area is directly adjacent to primary sidelit area with an area equal to the product of the sidelit width and the secondary sidelit depth.~~

~~The secondary sidelit width is the width of the window plus, on each side, the smallest of:~~

- ~~i. 2 feet; or~~
- ~~ii. The distance to any 5 feet or higher permanent vertical obstruction; or~~
- ~~iii. The distance to any skylit daylight area.~~

~~The secondary sidelit depth is the horizontal distance perpendicular to the glazing which begins from one window head height, and ends at the smaller of:~~

- ~~i. Two window head heights;~~
- ~~ii. The distance to any 5 feet or higher permanent vertical obstruction; or~~
- ~~iii. The distance to any skylit daylight area.~~

~~D. **DAYLIGHT AREA, SKYLIT** is the combined daylight area under each skylight without double counting overlapping areas. The daylight area under each skylight is bounded by the rough opening of the skylight, plus horizontally in each direction the smallest of:~~

- ~~i. 70 percent of the floor-to-ceiling height; or~~
- ~~ii. The distance to any primary sidelit area, or the daylight area under rooftop monitors; or~~
- ~~iii. The distance to any permanent partition or permanent rack which is farther away than 70 percent of the distance between the top of the permanent partition or permanent rack and the ceiling.~~

~~2. Luminaires providing general lighting that are in or are partially in the skylit daylight area and/or the primary sidelit daylight area shall be controlled as follows:~~

~~A. Primary sidelit and skylit daylight areas shall have at least one lighting control that:~~

- ~~i. Controls at least 50 percent of the general lighting power in the primary sidelit and skylit daylight areas separately from other lighting in the enclosed space, in a uniform level of illuminance in accordance with Section 131(b);~~
- ~~ii. Controls luminaires in primary sidelit areas separately from skylit areas.~~

~~**EXCEPTION to Section 131(c) 2A:** Primary sidelit and skylit daylight areas that have a combined area totaling less than or equal to 250 square feet within any enclosed space.~~

~~B. For all skylit daylight areas:~~

- ~~i. The skylit daylight area shall be shown on the plans.~~
- ~~ii. All of the general lighting in the skylit area shall be controlled independently by an automatic daylighting control device that meets the applicable requirements of Section 119.~~
- ~~iii. The automatic daylighting control shall be installed in accordance with Section 131(c) 2D.~~

~~**EXCEPTION 1 to Section 131(c) 2B:** Where the total skylit daylight area in any enclosed space is less than or equal to 2,500 square feet.~~

~~**EXCEPTION 2 to Section 131(c) 2B:** Skylit daylight areas where existing adjacent structures obstruct direct beam sunlight for at least 6 hours per day during the equinox as calculated using computer or graphical methods.~~

~~**EXCEPTION 3 to Section 131(c) 2B:** When the skylight effective aperture is greater than 4.0 percent, and all general lighting in the skylit area is controlled by a multi-level astronomical time switch that meets the requirements of Section 119(h) and that has an override switch that meets the requirements of Section 131(d) 2.~~

~~**EXCEPTION 4 to Section 131(c) 2B:** Skylit daylight areas where the effective aperture is less than 0.006. The effective aperture for skylit daylight areas is specified in Section 146(a) 2E.~~

~~C. The primary sidelit area(s) shall be shown on the plans, and the general lighting in the primary sidelit areas shall be controlled independently by an automatic daylighting control device that meets the applicable requirements of Section 119 and is installed in accordance with Section 131(c) 2D.~~

**EXCEPTION 1 to Section 131(c) 2C:** Where the total primary sidelit daylight area in any enclosed space has an area less than or equal to 2,500 square feet.

**EXCEPTION 2 to Section 131(c) 2C:** Primary sidelit daylight areas where the effective aperture is less than 0.1. The effective aperture for primary sidelit daylight areas is specified in Section 146(a)2E.

**EXCEPTION 3 to Section 131(c) 2C:** Primary sidelit daylight areas where existing adjacent structures are twice as tall as their distance away from the windows.

**EXCEPTION 4 to Section 131(c) 2C:** Parking garages.

~~D. Automatic Daylighting Control Device Installation and Operation. Automatic daylighting control devices shall be installed and configured to operate according to all of the following requirements:~~

- ~~i. Automatic daylighting control devices shall have photosensors that are located so that they are not readily accessible in accordance with the designer's or manufacturer's instructions.~~
- ~~ii. The location where calibration adjustments are made to the automatic daylighting control device shall be readily accessible to authorized personnel, or located within 2 feet of a ceiling access panel that is no higher than 11 feet above floor level.~~
- ~~iii. Automatic daylighting controls shall be multi-level, including continuous dimming, and have at least one control step that is between 50 to 70 percent of rated power of the controlled lighting shall provide multi-level lighting in accordance with Section 131(b).~~

**EXCEPTION 1 to Section 131(c) 2Diii:** Controlled lighting having a lighting power density less than 0.3 W/ft<sup>2</sup>.

**EXCEPTION 2 to Section 131(c) 2Diii:** When skylights are replaced or added to on an existing building with an existing general lighting system.

- ~~iv. Under all daylight conditions in all areas served by the controlled lighting, the combined illuminance from the controlled lighting and daylight is not less than the illuminance from controlled lighting when no daylight is available.~~
- ~~v. When all areas served by the controlled lighting are receiving daylight illuminance levels greater than 150 percent of the illuminance from controlled lighting when no daylight is available, the controlled lighting power consumption shall be no greater than 35 percent of the rated power of the controlled lighting.~~

**(dc) Shut-off Controls.**

1. \_\_\_\_\_ In addition to lighting the manual controls installed to comply with Sections 130.1(a) and (b), ~~for every floor, all installed indoor lighting systems shall be equipped with separate automatic controls that meet the following requirements:~~

A. May be an occupant sensing device, automatic time control, signal from another building system, or other device capable of automatically shutting off all of the lighting when the space is typically unoccupied.

B. Separately controls the lighting on each floor.

C. Separately controls a space enclosed by ceiling height partitions not exceeding 5,000 square feet.

EXCEPTION to Section 130.1(c)1C: In the following function areas the area controlled may not exceed 20,000 square feet: Malls, auditoriums, single tenant retail, industrial, convention centers, and arenas.

D. Separately control general, display, ornamental, and display case lighting.

E. shall meet the requirements of Section 110.9, and may be an occupant sensor, automatic time switch, signal from another building system, or other device capable of automatically shutting off the lighting in response to occupancy conditions.

**EXCEPTION 1 to Section 130.1(d)(c)1:** Where the lighting system is serving an area that ~~must be continuously lit~~ is in continuous use, 24 hours per day/365 days per year.

**EXCEPTION 2 to Section 130.1(c)1:** Lighting complying with Section 130.1(c)5, or 7. **EXCEPTION 2 to Section 131(d)1:** Lighting in corridors, guestrooms, dwelling units of high rise residential buildings and hotel/motels, and parking garages

**EXCEPTION 3 to Section 130.1(d)(c)1:** ~~Up~~In office buildings, up to 0.30.05 watts per square foot of lighting in any area within a building ~~that must may~~ be continuously illuminated ~~for reasons of building security or emergency egress~~, provided that the area is designated an ~~security or~~ emergency egress area on the plans and specifications submitted to the enforcement agency under Section 10-103(a)2 of Title 24, Part 1.

**EXCEPTION 4 to Section 130.1(c)2:** Electrical equipment rooms subject to Article 110.26(D) of the California Electric Code

2. Countdown timer switches shall not be used to comply with the automatic shutoff control requirements in Section 130.1(c)1.

**EXCEPTION to Section 130.1(c)2:** Single-stall bathrooms less than 40 square feet, and closets less than 40 square feet may use countdown timer switches with a maximum setting capability of five minutes

32. If an automatic control device, other than an occupant sensing device, is installed to comply with Section 130.1(d)(c)1, it shall incorporate an override ~~switching~~lighting control device that:

A. ~~Is readily accessible; and~~

B. ~~Is located so that a person using the device can see the lights or the area controlled by that switch, or so that the area being lit is annunciated; and~~

C. ~~Is manually operated~~Complies with Section 130.1(a); and

~~DB.~~ Allows the lighting to remain on for no more than 2 hours when an override is initiated; and

**EXCEPTION to ~~Section 131(d)2D~~ Section 130.1(c)3B:** In the following function areas, the override time may exceed 2 hours: ~~m~~Malls, auditoriums, single tenant retail spaces, industrial facilities, and arenas, where captive-key override is utilized; ~~override time may exceed 2 hours.~~

E. ~~Controls an area enclosed by ceiling height partitions not exceeding 5,000 square feet.~~

**EXCEPTION to ~~Section 131(d)2E~~:** In malls, auditoriums, single tenant retail spaces, industrial facilities, convention centers and arenas, the area controlled may not exceed 20,000 square feet.

43. If an automatic time ~~switch~~lighting control device, other than an occupant ~~sensors~~sensing device, is installed to comply with Section 130.1(d)(c)1, it shall incorporate an automatic holiday "shut-off" feature that turns off all loads for at least 24 hours, and then resumes the normally scheduled operation.

**EXCEPTION to ~~Section 131(d)3~~ Section 130.1(c)4:** In retail stores and associated malls, restaurants, grocery stores, churches, and theaters, the automatic time lighting control device is not required to incorporate an automatic holiday shut off feature.

54. Areas where Occupant SensorsSensing Devices are Required for Compliance with Section 131(e)1-to Shutoff All Lighting.

A. ~~In o~~Offices 250 square feet or smaller, multipurpose rooms of less than 1,000 square feet, and classrooms of any size, and conference rooms of any size, lighting shall be equipped-controlled with occupant sensor(s)sensing devices to automatically shut off all of the lighting when the room is unoccupied. In addition, controls shall be provided that allow the lights to be manually shut ~~off~~OFF in accordance with Section 130.1(a) regardless of the sensor status.

6. Areas where partial ON/OFF occupant sensing devices are required in addition to complying with Section 130.1(c)1.

A. In aisle ways and open areas in warehouses, lighting shall be controlled with occupant sensing devices that automatically reduce lighting power by at least 50 percent when the areas are unoccupied. The occupant sensing devices shall independently control lighting in each aisle way, and shall not control lighting beyond the aisle way being controlled by the sensor.

**EXCEPTION 1 to Section 130.1(c)6A:** In aisle ways and open areas in warehouses in which the installed lighting power is 80 percent or less of the value allowed under the Area Category Method, occupant sensing devices shall reduce lighting power by at least 40 percent.

**EXCEPTION 2 to Section 130.1(c)6A:** When metal halide lighting or high pressure sodium lighting is installed in warehouses, occupant sensing devices shall reduce lighting power by at least 40 percent.

- B. In library book stack aisles 10 feet or longer that are accessible from only one end, and library book stack aisles 20 feet or longer that are accessible from both ends, lighting shall be controlled with occupant sensing devices that automatically reduce lighting power by at least 50 percent when the areas are unoccupied. The occupant sensing devices shall independently control lighting in each aisle way, and shall not control lighting beyond the aisle way being controlled by the sensor.
- C. Lighting installed in corridors and stairwells shall be controlled by occupant sensing devices that separately reduce the lighting power in each space by at least 50 percent when the space is unoccupied. The occupant sensing devices shall be capable of automatically turning the lighting fully ON only in the separately controlled space, and shall be automatically activated from all designed paths of egress.

**7. Areas where partial ON/OFF occupant sensing devices are required instead of complying with Section 130.1(c)1.**

- A. Lighting in stairwells and common area corridors which provide access to guestrooms and dwelling units of high-rise residential buildings and hotel/motels shall be controlled with occupant sensor(s) that automatically reduce lighting power by at least 50 percent when the areas are unoccupied. The occupant sensing devices shall be capable of automatically turning the lighting fully ON only in the separately controlled space, and shall be automatically activated from all designed paths of egress.

**EXCEPTION to Section 130.1(c)7A:** In corridors and stairwells in which the installed lighting power is 80 percent or less of the value allowed under the Area Category Method, occupant sensing devices shall reduce power by at least 40 percent.

- B. In parking garages, parking areas and loading and unloading areas, general lighting shall be controlled by occupant sensing devices having at least one control step between 20 percent and 50 percent of design lighting power. No more than 500 watts of rated lighting power shall be controlled together as a single zone. A reasonably uniform level of illuminance shall be achieved in accordance with the applicable requirements in Table 130.1-A. The occupant sensing devices shall be capable of automatically turning the lighting fully ON only in the separately controlled space, and shall be automatically activated from all designed paths of egress.

Note: Interior areas of parking garages are classified as indoor lighting for compliance with Section 130.1(c)7B. Parking areas on the roof of a parking structure are classified as outdoor hardscape and shall comply with the applicable provision in Section 130.2.

**(d) Automatic Daylighting Controls.**

**1. Daylit Zones shall be defined as follows:**

- A. SKYLIT DAYLIT ZONE is the area on plan under each skylight, 0.7 times ceiling height in each direction from the edge of the rough opening of the skylight, minus any area on plan beyond a permanent obstruction that is taller than the following: A permanent obstruction that is taller than one-half the distance from the floor to the bottom of the skylight. Use the bottom of the skylight well for skylights having wells, or to the bottom of the skylight if no skylight well exists.

For the purpose of determining the skylit daylit zone, the geometric shape of the skylit daylit zone shall be identical to the geometric shape of the rough opening of the skylight; for example, for a rectangular skylight the skylit daylit zone plan area shall be rectangular, and a circular skylight the skylit daylit zone plan area shall be circular.

- B. PRIMARY SIDELIT DAYLIT ZONE is the area on plan directly adjacent to each vertical glazing, one window head height deep into the area, and window width plus 0.5 times window head height wide on each side of the rough opening of the window, minus any area on plan beyond a permanent obstruction that is 6 feet or taller as measured from the floor.
- C. SECONDARY SIDELIT DAYLIT ZONE is the area on plan directly adjacent to each vertical glazing, two window head heights deep into the area, and window width plus 0.5 times window head height wide on each

side of the rough opening of the window, minus any area on plan beyond a permanent obstruction that is 6 feet or taller as measured from the floor.

Note: Modular furniture walls shall not be considered a permanent obstruction.

2. Luminaires providing general lighting that are in or partially in the Skylit Daylit Zones and the Primary Sidelit Daylit Zones shall be controlled independently by fully functional automatic daylighting controls that meet the applicable requirements of Section 110.9, and the applicable requirements below:

- A. All Skylit Daylit Zones and Primary Sidelit Daylit Zones shall be shown on the plans.
- B. Luminaires in the Skylit Daylit Zone shall be controlled separately from those in the Primary Sidelit Daylit Zones
- C. Luminaires that fall in both a Skylit and Primary Sidelit Daylit Zone shall be controlled as part of the Skylit Daylit Zone
- D. **Automatic Daylighting Control Device Installation and Operation.** Automatic daylighting control devices shall be installed and configured to operate according to all of the following requirements:
  - i. Photosensors shall be located so that they are not readily accessible to unauthorized personnel.
  - ii. The location where calibration adjustments are made to an automatic daylighting control device shall be accessible only to authorized personnel.
  - iii. Automatic daylighting controls shall provide functional multi-level lighting, including continuous dimming, and have at least the number of control steps specified in Table 130.1-A.

**EXCEPTION 1 to Section 130.1(d)2Diii:** Controlled lighting having a lighting power density less than 0.3 W/ft<sup>2</sup> is not required to provide multi-level lighting controls.

**EXCEPTION 2 to Section 130.1(d)2Diii:** When skylights are replaced or added to an existing building where there is an existing general lighting system that is not being altered, multi-level lighting controls are not required.

- iv. For each space, the combined illuminance from the controlled lighting and daylight shall not be less than the illuminance from controlled lighting when no daylight is available
- v. In areas served by lighting that is daylight controlled, when the illuminance received from the daylight is greater than 150 percent of the illuminance received from the general lighting system, the general lighting power in that daylight zone shall be reduced by a minimum of 65 percent.

**EXCEPTION 1 to Section 130.1(d)2:** Rooms in which the combined total installed general lighting power in the Skylit Daylit Zone and Primary Sidelit Daylit Zone is less than 120 Watts.

**EXCEPTION 2 to Section 130.1(d)2:** Rooms which have a total glazing area of less than 24 square feet.

**EXCEPTION 2 to Section 130.1(d)2:** Parking garages complying with Section 130.1(d)3.

3. **Parking Garage Daylighting Requirements.** In a parking garage area with combined total of 36 square feet or more of glazing or opening, luminaires providing general lighting that are in the combined primary and secondary sidelit daylit zones shall be controlled independently by automatic daylighting control devices, and shall meet the following requirements as applicable:

- A. All primary and secondary sidelit daylit zones shall be shown on the plans.
- B. Automatic Daylighting Control Device Installation and Operation. Automatic daylighting control devices shall be installed and configured to operate according to all of the following requirements:
  - i. Automatic daylighting control devices shall have photosensors that are located so that they are not readily accessible to unauthorized personnel.
  - ii. The location where calibration adjustments are made to the automatic daylighting control device shall be accessible only to authorized personnel.

- iii. Automatic daylighting controls shall be multi-level, continuous dimming or ON/OFF.
- iv. The combined illuminance from the controlled lighting and daylight is not less than the illuminance from controlled lighting when no daylight is available.
- v. When primary sidelit zones receive illuminance levels greater than 150 percent of the illuminance provided by the controlled lighting when no daylight is available, the controlled lighting power consumption shall be zero.

**EXCEPTION 1 to Section 130.1(d)3:** Luminaires located in the daylight transition zone and luminaires for only dedicated ramps. Daylight transition zone and dedicated ramps are defined in Section 100.1.

**EXCEPTION 2 to Section 130.1(d)3:** The total combined general lighting power in the primary sidelit daylight zones is less than 60 watts

- ~~(e) **Display Lighting.** Floor and wall display, window display, and case display lighting shall each be separately switched on circuits that are 20 amps or less.~~
- ~~(f) **Automatic Controls Required for Tailored Method** When the Tailored Method in Section 146 is used for calculating allowed indoor lighting power density, the general lighting shall be controlled separately from the display, ornamental, and display case lighting.~~

**(fe) Demand Responsive Lighting Controls.**

~~g **Controls.** Demand responsive automatic lighting controls that uniformly reduce lighting power consumption by a minimum of 15 percent shall be installed in retail buildings with sales floor areas greater than 50,000 square feet.~~

- 1. In buildings larger than 10,000 square feet, lighting required to ~~meet~~ comply with Section 130.1(b) shall be capable of being automatically reduced by a demand responsive lighting control as follows:
  - A. By a minimum of 15 percent of full power for continuous dimming systems, or
  - B. By one level below full ON in accordance with Table 130.1-A for stepped dimming or stepped switching.

**Table 130.1-A MULTI-LEVEL LIGHTING CONTROLS AND UNIFORMITY REQUIREMENTS**

<u>Luminaire Type</u>	<u>Minimum Required Control Steps ( percent of full rated power 1 )</u>	<u>Uniform level of illuminance shall be achieved by:</u>			
<u>Line-voltage sockets except GU-24</u>	<u>Continuous dimming 10-100 percent</u>				
<u>Low-voltage incandescent systems</u>					
<u>LED luminaires and LED source systems</u>					
<u>GU-24 rated for LED</u>					
<u>GU-24 sockets rated for fluorescent &gt; 20 watts</u>	<u>Continuous dimming 20-100 percent</u>				
<u>Pin-based compact fluorescent &gt; 20 watts <sup>2</sup></u>					
<u>GU-24 sockets rated for fluorescent ≤ 20 watts</u>	<u>Minimum one step between 30-70 percent</u>	<u>Stepped dimming, or Continuous dimming, or Switching alternate lamps in a luminaire</u>			
<u>Pin-based compact fluorescent ≤ 20 watts <sup>2</sup></u>					
<u>Linear fluorescent and U-bent fluorescent ≤ 13 watts</u>					
<u>Linear fluorescent and U-bent fluorescent &gt; 13 watts</u>	<u>Minimum one step in each range:</u>				<u>Stepped dimming, or Continuous dimming, or switching alternate lamps in each luminaire, having a minimum of 4 lamps per luminaire, illuminating the same area and in the same manner</u>
	<u>20-40 %</u>	<u>50-70 %</u>	<u>80-85 %</u>	<u>100 %</u>	
<u>Track Lighting</u>	<u>Minimum one step between 30 – 70 percent</u>				<u>Step dimming, or Continuous dimming, or Separately switching circuits in multi-circuit track with a minimum of two circuits.</u>
<u>HID &gt; 20 watts</u>	<u>Minimum one step between 50 - 70 percent</u>				<u>Stepped dimming, or Continuous dimming, or Switching alternate lamps in each luminaire, having a minimum of 2 lamps per luminaire, illuminating the same area and in the same manner.</u>
<u>Induction &gt; 25 watts</u>					
<u>Other light sources</u>					
<u>1. Full rated input power of ballast and lamp, corresponding to maximum ballast factor</u>					
<u>2. Includes only pin based lamps; twin tube, multiple twin tube, and spiral lamps</u>					

## SECTION 130.2 – OUTDOOR LIGHTING CONTROLS AND EQUIPMENT

- (a) **Outdoor Incandescent Lighting.** All ~~permanently installed incandescent~~ outdoor incandescent luminaires ~~employing lamps rated over 100 watts, determined in accordance with Section 130.0(c)1,~~ shall ~~either: have a lamp efficacy of at least 60 lumens per watt; or~~ be controlled by a motion sensor.

~~EXCEPTION 1 to Section 132(a): Lighting required by a health or life safety statute, ordinance or regulation, including but not limited to emergency lighting.~~

~~EXCEPTION 2 to Section 132(a): Lighting used in or around swimming pools, water features or other locations subject to Article 680 of the California Electrical Code.~~

~~EXCEPTION 3 to Section 132(a): Searchlights.~~

~~EXCEPTION 4 to Section 132(a): Theme lighting for use in theme parks.~~

~~EXCEPTION 5 to Section 132(a): Lighting for film or live performances.~~

~~EXCEPTION 6 to Section 132(a): Temporary outdoor lighting.~~

~~EXCEPTION 7 to Section 132(a): Light emitting diode, light emitting capacitors, neon and cold cathode lighting.~~

~~EXCEPTION 8 to Section 132(a): Sign lighting~~

- (b) **Luminaire Cutoff Requirements.** All outdoor luminaires ~~that use lamps rated greater than 175 watts rated for greater than 150 lamp watts, determined in accordance with Section 130.0(c), in hardscape areas including parking lots, building entrances, sales and non-sales canopies, and all outdoor sales areas~~ shall comply with either subsection 1 or 2 below:

1. Shall be designated Cutoff for light distribution. To comply with this requirement, the luminaire shall be rated Cutoff in a photometric test report that includes any tilt or other non-level mounting condition of the installed luminaire.

Cutoff is a luminaire light distribution classification where the candela per 1000 lamp lumens does not numerically exceed 25 at or above a vertical angle of 90 degrees above nadir, and 100 at or above a vertical angle of 80 degrees above nadir. Nadir is in the direction of straight down, as would be indicated by a plumb line. 90 degrees above nadir is horizontal. 80 degrees above nadir is 10 degrees below horizontal.

2. Shall comply with Backlight, Uplight, and Glare (BUG) requirements as follows:

A. There are no Backlight requirements in Section 130.2 of Title 24, Part 6.

B. Maximum zonal lumens for Uplight shall be in accordance with Table 130.2-A, and

C. Maximum zonal lumens for Glare shall be in accordance with Table 130.2-B.

**EXCEPTION 1 to Section 130.2(b):** Signs.

**EXCEPTION 2 to Section 130.2(b):** Lighting for building facades, public monuments, statues, and vertical surfaces of bridges.

**EXCEPTION 3 to Section 130.2(b):** Lighting ~~required not permitted to be cutoff by for compliance with~~ a health or life safety statute, ordinance, or regulation, ~~including but not limited to, emergency lighting.~~

~~**EXCEPTION 4 to Section 132(b):** Temporary outdoor lighting.~~

~~**EXCEPTION 5 to Section 132(b):** Lighting used in or around swimming pools, water features, or other locations subject to Article 680 of the California Electrical Code.~~

**EXCEPTION 64 to Section 130.2(b):** Replacement of existing pole mounted luminaires in hardscape areas meeting all of the following conditions:

- A. Where the existing luminaire does not meet the luminaire cutoff requirements in Section 130.2(b); and
- B. Spacing between existing poles is greater than 6 times the mounting height of the existing luminaires; and

- C. Where no additional poles are being added to the site; and
- D. Where new wiring to the luminaires is not being installed; and
- E. Provided that the connected lighting power wattage is not increased.

(c) **Controls for Outdoor Lighting.** Outdoor lighting controls shall be installed that meet the following requirements, as applicable:

**EXCEPTION 1 to Section 130.2(c):** Outdoor lighting not permitted to be turned off for compliance with a health or life safety statute, ordinance, or regulation.

**EXCEPTION 2 to Section 130.2(c):** Lighting in tunnels required to be illuminated 24 hours per day/365 days per year.

1. All ~~permanently~~-installed outdoor lighting shall be controlled by a photocontrol or astronomical time ~~switch~~ lighting control that automatically turns off the outdoor lighting when daylight is available.

~~**EXCEPTION to Section 132(c)1:** Lighting in tunnels, and large permanently covered outdoor areas that require illumination are subject to occupancy during daylight hours 24 hours per day/365 days per year.~~

- ~~2. For lighting of building facades, parking lots, sales and non-sales canopies, all outdoor sales areas, and student pick-up/drop-off zones where two or more luminaires are used, an automatic time switch shall be installed that is capable of (A) turning off the lighting when not needed and~~

~~(B) reducing the lighting power (in watts) by at least 50 percent but not exceeding 80 percent or providing continuous dimming through a range that includes 50 percent through 80 percent reduction.~~

~~**EXCEPTION 1 to Section 132(c)2:** Lighting required by a health or life safety statute, ordinance, or regulation, including but not limited to, emergency lighting.~~

~~**EXCEPTION 2 to Section 132(c)2:** Lighting for steps or stairs that require illumination during daylight hours.~~

~~**EXCEPTION 3 to Section 132(c)2:** Lighting that is controlled by a motion sensor and photocontrol.~~

~~**EXCEPTION 4 to Section 132(c)2:** Lighting for facilities that have equal lighting requirements at all hours and are designed to operate continuously.~~

~~**EXCEPTION 5 to Section 132(c)2:** Temporary outdoor lighting.~~

~~**EXCEPTION 6 to Section 132(c)2:** Signs.~~

- ~~2. All permanently-installed outdoor lighting shall be circuited and switched-controlled to turn off independently from other electrical loads.~~

- ~~3. All installed outdoor lighting where the bottom of the luminaire is mounted 24 feet or less above the ground, shall be controlled with motion sensors. The motion sensor shall be capable of automatically reducing the lighting power of each luminaire by at least 40 percent but not exceeding 80 percent, or provide continuous dimming through a range that includes 40 percent through 80 percent, and shall employ auto-on functionality. No more than 1,500 watts of lighting power shall be controlled together.~~

~~**EXCEPTION 1 to Section 130.2(c)3:** Lighting for Outdoor Sales Frontage, Outdoor Sales Lots, and Outdoor Sales Canopies complying with Section 130.2(c)4.~~

~~**EXCEPTION 2 to Section 130.2(c)3:** Lighting for Building Facades, Ornamental Hardscape and Outdoor Dining complying with Section 130.2(c)5.~~

~~**EXCEPTION 3 to Section 130.2(c)3:** Outdoor lighting, where luminaire rated wattage is determined in accordance with Section 130.0(c), and which meet one of the following conditions:~~

- ~~A. Pole-mounted luminaires with a maximum rated wattage of 75 watts, or~~
- ~~B. Non-pole mounted luminaires with maximum rated wattage of 30 watts, or~~

- C. Linear lighting with a maximum wattage of 4 watts per linear foot of luminaire.
4. For Outdoor Sales Frontage, Outdoor Sales Lots, and Outdoor Sales Canopies lighting, an automatic lighting control shall be installed that meets the following requirements:
- A. A distributed part-night device as defined in Section 100.1, or
- B. Motion sensors capable of automatically reducing lighting power by at least 40 percent but not exceeding 80 percent, and which have auto-on functionality.
5. For Building Facade, Ornamental Hardscape and Outdoor Dining lighting, an automatic lighting control shall be installed that meets one or more of the following requirements:
- A. A distributed part-night device as defined in Section 100.1, or
- B. Motion sensors capable of automatically reducing lighting power by at least 40 percent but not exceeding 80 percent, and which have auto-on functionality, or
- C. A centralized time-based zone lighting control capable of automatically reducing lighting power by at least 50 percent.

**EXCEPTION to Section 130.2(c)5:** Wall pack luminaires where the bottom of the luminaire is mounted 24 feet or less above the ground shall comply with the applicable requirements in Section 130.2(c)3

*Table 130.2-A Uplight Ratings (Maximum Zonal Lumens)*

<u>Secondary Solid Angle</u>	<u>Maximum Zonal Lumens per Outdoor Lighting Zone</u>			
	<u>OLZ 1</u>	<u>OLZ 2</u>	<u>OLZ 3</u>	<u>OLZ 4</u>
<u>Uplight High (UH)</u> <u>100 to 180 degrees</u>	<u>10</u>	<u>50</u>	<u>500</u>	<u>1,000</u>
<u>Uplight Low (UL)</u> <u>90 to &lt;100 degrees</u>	<u>10</u>	<u>50</u>	<u>500</u>	<u>1,000</u>

*Table 130.2-B Glare Ratings (Maximum Zonal Lumens)*

<u>Glare Rating for Asymmetrical Luminaire Types (Type I, Type II, Type III, Type IV)</u>				
<u>Secondary Solid Angle</u>	<u>Maximum Zonal Lumens per Outdoor Lighting Zone</u>			
	<u>OLZ 1</u>	<u>OLZ 2</u>	<u>OLZ 3</u>	<u>OLZ 4</u>
<u>Forward Very High (FVH)</u> <u>80 to 90 degrees</u>	<u>100</u>	<u>225</u>	<u>500</u>	<u>750</u>
<u>Backlight Very High (BVH)</u> <u>80 to 90 degrees</u>	<u>100</u>	<u>225</u>	<u>500</u>	<u>750</u>
<u>Forward High (FH)</u> <u>60 to &lt;80 degrees</u>	<u>1,800</u>	<u>5,000</u>	<u>7,500</u>	<u>12,000</u>
<u>Backlight High (BH)</u> <u>60 to &lt;80 degrees</u>	<u>500</u>	<u>1,000</u>	<u>2,500</u>	<u>5,000</u>
<u>Glare Rating for Quadrilateral Symmetrical Luminaire Types (Type V, Type V Square)</u>				
<u>Secondary Solid Angle</u>	<u>Maximum Zonal Lumens per Outdoor Lighting Zone</u>			
	<u>OLZ 1</u>	<u>OLZ 2</u>	<u>OLZ 3</u>	<u>OLZ 4</u>

<u>Forward Very High (FVH)</u> <u>80 to 90 degrees</u>	<u>100</u>	<u>225</u>	<u>500</u>	<u>750</u>
<u>Backlight Very High (BVH)</u> <u>80 to 90 degrees</u>	<u>100</u>	<u>225</u>	<u>500</u>	<u>750</u>
<u>Forward High (FH)</u> <u>60 to &lt;80 degrees</u>	<u>1,800</u>	<u>5,000</u>	<u>7,500</u>	<u>12,000</u>
<u>Backlight High (BH)</u> <u>60 to &lt;80 degrees</u>	<u>1,800</u>	<u>5,000</u>	<u>7,500</u>	<u>12,000</u>

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## SECTION 130.3 – SIGN LIGHTING CONTROLS

(a) **Controls for All Signs Lighting.** All signs with permanently connected lighting shall meet the requirements of Section 133 below, as applicable:

1. **~~Automatic Time Switch Control~~ Indoor Signs.** All indoor signs with permanently connected lighting shall be controlled with an automatic time ~~switch lighting~~ control or astronomical time lighting control that complies with the applicable requirements of Section 119.
2. **~~Photocontrol or outdoor astronomical time switch control~~ Outdoor Signs.** Outdoor sign lighting shall meet the following requirements, as applicable:

A. All outdoor signs lighting shall be controlled with a photocontrol ~~or and outdoor~~ astronomical time ~~switch lighting~~ control.

**EXCEPTION to Section 130.3(a)2A:** Outdoor signs in tunnels, and signs in large permanently covered outdoor areas that require illumination during daylight hours, that must be continuously lit, 24 hours per day/365 days per year.

3. **~~B. Dimming.~~** All outdoor signs lighting that is on both day and night shall be controlled with a dimmer that provides the ability to automatically reduce a sign lighting power by a minimum of 65 percent during nighttime hours.

**EXCEPTION 1 to Section 133(a)3:** Signs that are illuminated at night and for less more than 1 hour per day during daylight hours shall be considered on both day and night.

**EXCEPTION 2 to Section 130.3(a)32B:** Outdoor signs in tunnels and large covered areas that require even illumination during daylight hours both day and night.

**EXCEPTION 3 to Section 133(a)3:** Metal halide, high pressure sodium, cold cathode, and neon lamps used to illuminate signs or parts of signs.

3. **~~Demand Responsive Electronic Message Center Control~~ EXCEPTION 4 to Section 133(a)3: Demand Responsive Electronic Message Center Control** An Electronic Message Center (EMC) having a new connected lighting power load greater than 15 kW shall have a control installed that is capable of reducing the lighting power by a minimum of 30 percent when receiving a demand response signal that is sent out by the local utility.

**EXCEPTION 5 to Section 130.3(a)43:** Lighting for EMCs that is required not permitted to be reduced by 30 percent for compliance with by a health or life safety statute, ordinance, or regulation, including but not limited to exit signs and traffic signs.

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## SECTION 130.4 – REQUIRED ~~NONRESIDENTIAL~~ LIGHTING CONTROL ACCEPTANCE

- (a) **Lighting Control Acceptance.** Before an occupancy permit is granted for a new building or ~~space~~area, or a new lighting system serving a building, ~~space~~area, or site is operated for normal use, ~~all~~ indoor and outdoor lighting controls serving the building, ~~space~~area, or site shall be certified as meeting the Acceptance Requirements for Code Compliance in accordance with Section 130.4. A Certificate of Acceptance shall be submitted to the enforcement agency under Section 10-103(a) of Title 24, Part 1, that:

1. Certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of Part 6.
2. Completes the applicable procedures in Nonresidential Appendix NA-7.6; and, completes signs and submits all applicable compliance forms.
3. Certifies that when lighting control systems are installed to comply with lighting control requirements in Title 24, Part 6, they comply with the applicable requirements of Sections 110.9.
4. Certifies that when an Energy Management Control System is installed to function as a lighting control for compliance with Title 24, Part 6, it functionally meets all applicable requirements for each application for which it is installed, in accordance with Sections 110.9, 130.0 through 130.5, 140.6 through 150.0, and 150.2.
4. Certifies that line-voltage track lighting integral current limiters comply with the applicable requirements of Section 110.9 and installed wattage has been determined in accordance with Section 130.0(c).
5. Certifies that line-voltage track lighting supplementary overcurrent protection panels comply with the applicable requirements of Section 110.9 and installed wattage has been determined in accordance with Section 130.0(c).
6. Certifies that lighting shutoff controls comply with Section 130.1(c)
7. Certifies that automatic daylight controls comply with Section 130.1(d)
8. Certifies that interlocked lighting systems used to serve an approved area comply with Section 140.6(a)1
9. Certifies that lighting controls installed to earn a Power Adjustment Factor (PAF) comply with Section 140.6(a)2
10. Certifies that additional lighting wattage installed for a videoconference studio complies with Section 140.6(c)2(vii)2.—~~Certifies that automatic daylighting controls meet the applicable requirements of Section 119 and Section 131(e) 2D.~~
- 3.—~~Certifies that when a multi-level astronomical time switch is used to meet EXCEPTION 3 to Section 131(e)2B all general lighting in the skylit area is controlled by a multi-level astronomical time switch that meets the applicable requirements of Section 119 and that has an override switch that meets the requirements of Section 131(d)2.~~
- 4.—~~Certifies that lighting controls meet the requirements of Section 131(a) through Section 131(e), Sections 131(e) and (f), and Section 146(a)2 as applicable.~~
- 5.—~~Certifies that automatic lighting controls meet the applicable requirements of Section 119 and Section 131(d).~~
- 6.—~~Certifies that occupant sensors meet the applicable requirements of Section 119 and Section 131(d).~~

~~711. Certified~~ Certifies that outdoor lighting controls ~~meet~~ comply with the applicable requirements of ~~Section 119 and~~ Section 130.2(c).

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## **SECTION 130.5 –ELECTRICAL POWER DISTRIBUTION SYSTEMS**

- (a) **Service Metering** Each electrical service shall have permanently installed user-accessible metering of total electrical energy use per Table 130.5-A.

**EXCEPTION to Section 130.5 (a)** Buildings for which the utility company provides a meter for occupant or user use that indicates instantaneous kW demand and kWh for a user-resettable period.

- (b) **Disaggregation of Electrical Circuits.** Electrical power distribution systems shall be designed to permit the disaggregated measurement of electrical load energy uses downstream from the service meter according to Table 130.5-B. Additive and subtractive methods may be used to determine aggregate and disaggregated energy use. This may be accomplished by any of the following methods:

1. Separate switchboards, motor control centers, or panelboards to which are connected only the required load or group of loads; or
2. Subpanels of the above to which are connected only the required load or group of loads and for which the subpanel load can be independently measured in aggregate; or
3. Branch circuits, taps or disconnects requiring overcurrent protection devices rated 60 amperes or greater.

**EXCEPTION to Section 130.5 (b)** Buildings for which a complete metering and measurement system is provided that as a minimum measures and reports the loads called for in Table 130.5B.

**(c) Voltage Drop**

1. **Feeders.** Feeder conductors shall be sized for a maximum voltage drop of two percent at design load.
2. **Branch Circuits.** Branch circuit conductors shall be sized for a maximum voltage drop of three percent at design load.

**EXCEPTION to Section 130.5(c):** Feeder conductors and branch circuits that are dedicated to emergency services.

- (d) **Circuit Controls for 120-Volt Receptacles.** In all buildings, both controlled and uncontrolled 120 volt receptacles shall be provided in each private office, open office area, reception lobby, conference room, kitchen, and copy room. Controlled receptacles shall meet the following requirements:

1. Electric circuits serving controlled receptacles shall be equipped with automatic shut-off controls following the requirements prescribed in section 130.1(c) for general lighting operating in the occupancy mode; and
2. At least one controlled receptacle shall be installed within 6 feet from each uncontrolled receptacle or a split-wired duplex receptacle with one controlled and one uncontrolled receptacle shall be installed; and
3. Controlled receptacles shall have a permanent marking to differentiate them from uncontrolled receptacles, and
4. For open office areas, controlled circuits shall be provided and marked to support installation and configuration of office furniture with receptacles that comply with section 130.1(a) 1, 2, and 3; and
5. Plug-in strips and other plug-in devices that incorporate an occupancy sensor shall not be used to comply with this requirement.

**EXCEPTION 1 to Section 130.5 (d):** In open office areas, controlled circuit receptacles are not required if at time of permit workstations are installed, and each workstation is equipped with an occupancy sensing device that is permanently mounted in each workstation, and which controls a hardwired, nonresidential-rated power strip. Plug-in strips and other plug-in devices that incorporate an occupancy sensor shall not be used for this exception.

**EXEMPTION 2 to Section 130.5 (d):** Receptacles that are only for the following purposes:

- i. In kitchens: receptacles specifically for refrigerators, water dispensers, and kitchen appliances
  - ii. Receptacles located a minimum of six feet above the floor that are specifically for clocks
  - iii. In network rooms: network copiers, fax machines, A/V and data equipment other than personal computers
  - iv. Receptacles on circuits rated more than 20 amperes.
- (e) **Demand Response Signals.** Demand response signals shall conform to a nationally recognized open communication standard. Acceptable standards include those defined by groups such as the Organization for the Advancement of Structured Information Standards (OASIS), Energy Interoperation Technical Committee (also known as Energy InterOp and OpenADR) or the ZigBee Alliance (also known as Smart Energy profile).
- (f) **Energy Management Control System (EMCS).**
1. An EMCS may be installed to comply with the requirements of one or more lighting controls if it meets the following minimum requirements:
    - A. Provides all applicable functionality for each specific lighting control device or system for which it is installed in accordance with Section 110.9, and
    - B. Complies with all applicable acceptance test requirements in accordance with Section 130.4 for each specific lighting control device or system for which it is installed, and
    - C. Complies with all applicable application requirements for each specific lighting control device or system for which it is installed, in accordance with Title 24, Part 6.
  2. An EMCS may be installed to comply with the requirements of a thermostat if it meets the following minimum requirements:
    - A. Provides all applicable functionality for each thermostat, including two-stage, electronic, and setback thermostats in accordance with Sections 140.4 and 141.0
    - B. Complies with all applicable acceptance test requirements in accordance with Section 120.5 for each thermostat
    - C. Complies with all applicable application requirements for each thermostat in accordance with Title 24, Part 6.

**TABLE 130.5-A MINIMUM REQUIREMENTS FOR METERING OF ELECTRICAL LOAD**

<b><u>Meter Type</u></b>	<b><u>Services rated 50 kVA or less</u></b>	<b><u>Services rated more than 50kVA and less than 250 kVA</u></b>	<b><u>Services rated more than 250 kVA and less than 1000kVA</u></b>	<b><u>Services rated more than 1000kVA</u></b>
<u>Instantaneous (at the time) kW demand</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>Historical peak demand (kW)</u>	<u>Not required</u>	<u>Not required</u>	<u>Required</u>	<u>Required</u>
<u>Resettable kWh</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>	<u>Required</u>
<u>kWh per rate period</u>	<u>Not required</u>	<u>Not required</u>	<u>Not required</u>	<u>Required</u>

**TABLE 130.5-B MINIMUM REQUIREMENTS FOR SEPARATION OF ELECTRICAL LOAD**

<u>Load Type</u>	<u>Services rated 50 kVA or less</u>	<u>Services rated more than 50kVA and less than 250 kVA</u>	<u>Services rated more than 250 kVA and less than 1000kVA</u>	<u>Services rated more than 1000kVA</u>
<u>Lighting including exit and egress lighting and exterior lighting</u>	<u>Not required</u>	<u>All lighting in aggregate</u>	<u>All lighting disaggregated by floor, type or area</u>	<u>All lighting disaggregated by floor, type or area</u>
<u>HVAC systems and components including chillers, fans, heaters, furnaces, package units, cooling towers, and circulation pumps associated with HVAC</u>	<u>Not required</u>	<u>All HVAC in aggregate</u>	<u>All HVAC in aggregate and each HVAC load rated at least 50 kVA</u>	<u>All HVAC in aggregate and each HVAC load rated at least 50kVA</u>
<u>Domestic and service water system pumps and related systems and components</u>	<u>Not required</u>	<u>All loads in aggregate</u>	<u>All loads in aggregate</u>	<u>All loads in aggregate</u>
<u>Plug load including appliances rated less than 25 kVA</u>	<u>Not required</u>	<u>All plug load in aggregate</u> <u>Groups of plug loads exceeding 25 kVA connected load in an area less than 5000 sf</u>	<u>All plug load separated by floor, type or area</u> <u>Groups of plug loads exceeding 25 kVA connected load in an area less than 5000 sf</u>	<u>All plug load separated by floor, type or area</u> <u>All groups of plug loads exceeding 25 kVA connected load in an area less than 5000 sf</u>
<u>Elevators, escalators, moving walks, and transit systems</u>	<u>Not required</u>	<u>All loads in aggregate</u>	<u>All loads in aggregate</u>	<u>All loads in aggregate</u>
<u>Other individual non-HVAC loads or appliances rated 25kVA or greater</u>	<u>Not required</u>	<u>All</u>	<u>Each</u>	<u>Each</u>
<u>Industrial and commercial load centers 25 kVA or greater including theatrical lighting installations and commercial kitchens</u>	<u>Not required</u>	<u>All</u>	<u>Each</u>	<u>Each</u>
<u>Renewable power source (net or total)</u>	<u>Each group</u>	<u>Each group</u>	<u>Each group</u>	<u>Each group</u>
<u>Loads associated with renewable power source</u>	<u>Not required</u>	<u>All loads in aggregate</u>	<u>All loads in aggregate</u>	<u>All loads in aggregate</u>
<u>Charging stations for electric vehicles</u>	<u>All loads in aggregate</u>	<u>All loads in aggregate</u>	<u>All loads in aggregate</u>	<u>All loads in aggregate</u>

**~~SECTION 136 – RESERVED~~**

**~~SECTION 137 – RESERVED~~**

**~~SECTION 138 – RESERVED~~**

**~~SECTION 139 – RESERVED~~**